

Analyzing Data

Using the table and the information below, answer the following questions.

During a car crash test, different cars with the same velocity crashed into a wall. The table shows the momentum of each car before the collision. (8 points each)

Crash Test Data							
Car	A	B	C	D	E	F	G
Mass of Car (kg)	1350	1400	1450	1500	1550	1600	1650
Momentum (kg m/s)	2970	3080	3190	3300	3410	3520	3630

15. A student read in the newspaper that crash tests were to be conducted at a lower velocity. How would this affect a car's momentum? How would the figures in the table change?

The car's momentum would lessen and all the momentums in the chart would change to smaller numbers.

16. On an Internet auto site, a student read that a 1625 kg car was put through a crash test. This test was conducted in the same way as the tests that generated the data shown in the table. Estimate that car's momentum.

The car's momentum would be about 3575 kg·m/s.

Extended Response (6 points each)

17. Imagine that you are whirling an object tied to the end of a string. What happens when you release the string? Describe the direction the object moves after you let go. Include a labeled sketch if you wish. Be sure to use the concept of centripetal force to explain the object's motion. Include an explanation of how one of Newton's laws explains this motion.

18. Why should you always wear a seat belt when riding in a car? Explain what happens when a person wears a seat belt and when he or she does not. For both cases, describe the direction objects inside the car move whenever the car's velocity changes. Include a labeled sketch if you wish. Be sure to use the concepts of inertia and unbalanced forces to explain your reasoning.